

COMPUTATION OF BLOOD FLOW IN THREE-DIMENSIONAL MODELS OF THE HEART

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Fluid dynamics problems encountered in engineering disciplines typically require the solution for the motion of a fluid given the specified motion of a boundary. Examples are determining the flow in a stationary conduit or the flow past an engine-driven propellor. By contrast, fluid dynamics problems encountered in biological disciplines involve flexible boundaries whose position is the result of the boundaries' interactions with the fluid in which it is immersed. This interaction also plays a critical role in determining the fluid motion as well. Knowing the boundary position in advance greatly simplifies computational fluid dynamics in engineering; not knowing it in advance greatly complicates computational fluid dynamics in biology.